

shaped poles along an arc by 90 degrees or less, each of said first and second pairs of reluctance gaps being formed in a different one of said first and second pole tip portions, the reluctance gaps in each of said pairs being spaced apart along an arc of less than forty degrees;

(e) a[n] cylindrical armature rotatably mounted in said second inner open space, said armature having a selected diameter, the ratio of said diameter to said width of each of said stator laminations in said outer portion being in the range of 1:2.36 to 1:4.4.

5 -6. A water pump for an evaporative cooler, said pump including pump means and a concentric shaded multiple-pole subfractional horsepower induction motor to drive said pump means, said motor including

(a) a stator including

- (i) an outer portion including a plurality of registered laminations each having a selected width and being of substantially equal shape and dimension stacked one on top of the other, said outer portion circumscribing and defining a first inner open space;
- (ii) an inner portion including a plurality of registered laminations each of substantially equal shape and dimension stacked one on top of the other, said inner portion of said stator core circumscribing and defining a second inner open space, and including first and second pole tip portions;

(b) at least a pair of shaded poles on said inner portion of said stator;

(c) at least one bobbin on said inner portion of said stator;

(d) at least first and second pairs of reluctance gaps on said inner portion of said stator, the reluctance gaps each being spaced apart from one of said shaped

1 poles along an arc by 90 degrees or less, each of said first and second pairs of
2 reluctance gaps being formed in a different one of said first and second pole
3 tip portions, the reluctance gaps in each of said pairs being spaced apart along
4 an arc of less than forty degrees; and,

5 (e) a cylindrical armature rotatably mounted in said second inner open space, said
6 armature having a selected diameter, the ratio of said diameter to said width of
7 each of said stator laminations in said outer portion being in the range of
8 1:2.36 to 1:4.4, said diameter of said armature permitting said armature to be
9 utilized in a C-frame shaded multiple-pole subfractional horsepower induction
10 motor for a water pump for an evaporative cooler.

11 2 1
12 7. The motor of Claim 3 wherein said diameter of said armature is in the range of 0.75 to
13 1.4 inches.

14 6 5
15 8. The pump of Claim 8 wherein said diameter of said armature in said concentric motor is
16 in the range of 0.75 to 1.4 inches.

17 3 2
18 9. The motor of Claim 7 wherein the distance along an arc between the reluctance gaps
19 comprising each of said pair of reluctance gaps is in the range of twenty to twenty-two
20 degrees.

21 7 6
22 10. The pump of Claim 8 wherein the distance along an arc between the reluctance gaps
23 comprising each of said pair of reluctance gaps is in the range of twenty to twenty-two
24 degrees.

1 4 3
2 11. The motor of Claim 9 wherein each of the reluctance gaps opens outwardly from said
3 second inner open space.

4 8 6
5 12. The pump of Claim 8 wherein each of the reluctance gaps opens outwardly from said
6 second inner open space.--

7 REQUEST FOR RECONSIDERATION

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9 The Examiner's thoughtful attention to this application is sincerely appreciated.

10
11 Reconsideration of the rejections stated in the Office Action of October 2, 1995,
12 is respectfully requested in view of the foregoing amendments and the following remarks.

13
14 Restriction

15
16 Applicant confirms his election without traverse to prosecute the invention of
17 Group II, Claims 3 to 5.

18
19 Specification

20
21 Applicant has endeavored to correct in the Specification the typographical errors
22 identified by the Examiner.

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28 15 - S -

1 Section 112

2
3 Applicant has corrected in Claim 3 the antecedent basis discrepancy identified
4 by the Examiner.

5
6 The Problem

7
8 For many years, two types of subfractional horsepower induction motors--a C-
9 frame (offset) motor and a concentric motor--have been utilized to provide motive power for
10 evaporative cooler water pumps. One particular drawback of this system is that each type of
11 motor requires a different size rotor.

12
13 The Invention

14
15 In accordance with the invention, Applicant provides a concentric shaded
16 multiple-pole subfractional horsepower induction motor for a water pump in an evaporative
17 cooler. In operation, Applicant's novel motor functions to run more efficiently and utilize a
18 rotor which can also be utilized in a C-frame motor. In order to achieve these functions, it
19 was necessary to include novel structural features in the claimed combination:

20
21 1. The ratio of the diameter of the armature to the width of the stator
22 laminations is in the range of 1:2.36 to 1:4.4. In other words, Applicant
23 **reduced** the diameter of the armature from the diameter typically found
24 in conventional **concentric** motors. The armature diameter was reduced
25 because the armature diameter in conventional **C-frame** motors is less
26 than the armature diameter in conventional **concentric** motors.

1 2. In order to reduce the armature diameter in a conventional C-frame
2 motor, Applicant had to provide a pair of reluctance gaps at each of the
3 pole tips portions of the motor.
4
5 3. Further, the reluctance gap pairs each had to be less than ninety degrees
6 from its associated shaded pole.

7
8 The foregoing is why the Specification notes:

9
10 11 "Another object of the invention is to provide an improved concentric
11 12 subfractional-horsepower induction motor which utilizes an armature or rotor
12 13 which can be interchangeably utilized on a C-frame stator in a subfractional-
13 14 horsepower induction motor." Page 2, lines 3-7. See also Specification, p. 8,
14 lines 26 to 30.

15
16 17 The reluctance gaps, armature diameter-to-laminate width ratios, etc. specified in the Claims
17 18 are critical because they are necessary to produce a concentric motor which functions
18 19 efficiently and which permits the armature to be interchanged with a C-frame motor.

20
21 22 Since none of the references of record appear to address the problem solved by
22 23 Applicant, none of the references appear fairly to suggest the concentric motor of the
23 24 invention. As noted by the Examiner, the Lautner reference does not disclose reluctance gaps
24 25 nor the intended ratio of the armature diameter to the width of the stator laminations, the Lee
25 26 reference fails to disclose the intended ratio of the armature diameter to the width of the stator
26 27 laminations, etc. Further, structural differences between the Lautner motor, Lee generator, and

1 the motors described in other of the references of record mitigate against the likelihood that
2 Applicant's novel combination is suggested.

3

4 Accordingly, Applicant respectfully submits that the invention as described in
5 the amended Claims is not rendered obvious under 35 U.S.C. Section 112 by the references
6 of record, whether taken singly or in combination.

7

8 The Claims

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10 The foregoing amendment cancels Claims 1, 2, 4, 5, amends Claim 3, and
11 inserts new Claims 6 to 12. The new Claims more clearly recite the features of the invention
12 discussed above.

13

14 If the Examiner finds merit in the foregoing amendments and remarks, it is
15 believed the application is condition for allowance, and such action is earnestly solicited.

16

17 Respectfully submitted,

18 
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